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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,449	09/16/2002	Andrei Yudin	6/905/2	6895

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EXAMINER

SHIBUYA, MARK LANCE

ART UNIT	PAPER NUMBER
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1639

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/031,449

Applicant(s)

YUDIN ET AL.

Examiner

Mark L. Shibuya

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 60-99 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 60-99 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### **DETAILED ACTION**

1. claims 60-99 are pending.

#### ***Election/Restrictions***

2. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I claim(s) 60-67, 69-74, 75-77, 79-88, 98 and 99, drawn to an asymmetric ligand comprising an aromatic ring system that is polyfluorinated and wherein the aromatic ring system is in the form of a binaphthyl or derivative thereof.

Group II, claim(s) 60, 61, 75, 79, 80, 82, 83, drawn to drawn to an asymmetric ligand comprising an aromatic ring system that is polyfluorinated and wherein the aromatic ring system is in the form of a biphenyl or derivative.

Group III, claim(s) 60, 61, 75, 79, 80, 82, 83, drawn to drawn to an asymmetric ligand comprising an aromatic ring system that is polyfluorinated and wherein the aromatic ring system is in the form of a bipyridyl or derivative.

Group IV, claim(s) 78, drawn to use of the ligand as claimed in claim 60 and wherein the aromatic ring system is in the form of a binaphthyl or derivative thereof.

Group V, claim(s) 78, drawn to use of the ligand as claimed in claim 60 and wherein the aromatic ring system is in the form of a biphenyl or derivative.

Group VI, claim(s) 78, drawn to use of the ligand as claimed in claim 60 and wherein the aromatic ring system is in the form of a bipyridyl or derivative.

Group VII, claim(s) 89-96, drawn to a method of generating a library of asymmetric ligands comprising providing an asymmetric polyfluorinated aromatic ring system and selectively substituting at least one fluorine atom with a nucleophile and wherein the aromatic ring system is in the form of a binaphthyl or derivative thereof.

Group VIII, claim(s) 89-91, 93-96, drawn to a method of generating a library of asymmetric ligands comprising providing an asymmetric polyfluorinated aromatic ring

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system and selectively substituting at least one fluorine atom with a nucleophile and wherein the aromatic ring system is in the form of a biphenyl or derivative.

Group IX, claim(s) 89-91, 93-96, drawn to a method of generating a library of asymmetric ligands comprising providing an asymmetric polyfluorinated aromatic ring system and selectively substituting at least one fluorine atom with a nucleophile and wherein the aromatic ring system is in the form of a bipyridyl or derivative.

Group X, claim(s) 97, drawn to use of a library of ligands, as made by the method of claim 89 and wherein the aromatic ring system is in the form of a binaphthyl or derivative thereof.

Group XI, claim(s) 97, drawn to use of a library of ligands, as made by the method of claim 89 and wherein the aromatic ring system is in the form of a biphenyl or derivative.

Group XII, claim(s) 97, drawn to use of a library of ligands, as made by the method of claim 89 and wherein the aromatic ring system is in the form of a bipyridyl or derivative.

The inventions listed as Groups I-XII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

According to PCT Rule 13.2, unity of invention exists only when the shared same or corresponding technical feature is a contribution over the prior art. The inventions listed as Groups I-XII do not relate to a single general inventive concept because the technical feature of an asymmetric ligand comprising an aromatic ring system that is polyfluorinated, as claimed in base claim 60, is anticipated by the prior art of Shepherd US 4,333,940 A, (e.g., at col. 1, lines 11-37, col. 2, lines 37-46, col. 6, lines 39-51, col. 13, lines 25-36, claim 1), and so cannot constitute a special technical feature linking the claims. The remainder of the claims, as set forth in the Groups above, lack the same or corresponding technical feature. The polyfluorinated aromatic ring systems, wherein the aromatic ring systems are biphenyl, binaphthyl or bipyridyl ring systems, as in claims 61 and 90, do not share a common molecular core structure that substantially results in a shared property, as the binaphthyl and biphenyl ring systems have a different number of aromatic rings and the bipyridyl ring system is a heteroaryl group that contains a nitrogen atom in the ring structure, (not shared by the binaphthyl or biphenyl ring systems). Furthermore, the burden of searching these different structures, is undue. For example, the biphenyl and binaphthyl ring systems are classed in 570/130 and the bipyridyl ring system is classed in the different class and subclass of 570/141.

Therefore, the technical feature linking the inventions of Groups I-XII does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art.

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The special technical feature of Group I is considered to be an aromatic ring system that is polyfluorinated and wherein the aromatic ring system is in the form of a binaphthyl or derivative thereof.

The special technical feature of Group II is considered to be an aromatic ring system that is polyfluorinated and wherein the aromatic ring system is in the form of a biphenyl or derivative thereof.

The special technical feature of Group III is considered to be an aromatic ring system that is polyfluorinated and wherein the aromatic ring system is in the form of a bipyridyl or derivative.

The special technical feature of Group IV is considered to be use of the ligand as claimed in claim 60 and wherein the aromatic ring system is in the form of a polyfluorinated binaphthyl or derivative thereof.

The special technical feature of Group V is considered to be use of the ligand as claimed in claim 60 and wherein the aromatic ring system is in the form of a polyfluorinated biphenyl or derivative thereof.

The special technical feature of Group VI is considered to be use of the ligand as claimed in claim 60 and wherein the aromatic ring system is in the form of a polyfluorinated bipyridyl or derivative thereof.

The special technical feature of Group VII is considered to be a method of generating a library of asymmetric ligands comprising a polyfluorinated binaphthyl or derivative thereof.

The special technical feature of Group VIII is considered to be a method of generating a library of asymmetric ligands comprising a polyfluorinated biphenyl or derivative thereof.

The special technical feature of Group IX is considered to be a method of generating a library of asymmetric ligands comprising a polyfluorinated bipyridyl or derivative thereof.

The special technical feature of Group X is considered to be use of a library of ligands, comprising a polyfluorinated binaphthyl or derivative thereof.

The special technical feature of Group XI is considered to be use of a library of ligands comprising a polyfluorinated biphenyl or derivative thereof

The special technical feature of Group XII is considered to be use of a library of ligands comprising a polyfluorinated bipyridyl or derivative thereof.

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Accordingly, Groups I-XII are not so linked by the same or a corresponding special technical feature as to form a single general inventive concept.

3. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

The species of a final ***chemical structure species as appropriate for the appropriate elected group***. The final structure of the species must be specified as to atom and bond. The elected species must be defined either by picture, or by expressing the species in terms of the variables of the formula. Applicant is reminded that a listing of all claims readable thereon, including any claims subsequently added, is required for a responsive reply to this species requirement. The provided chemical structure must depict a single molecule species, from which a search of the prior art is to commence.

If any of Groups IV-VI are elected, applicant must further elect the species of a use of a ligand, from the group of consisting of the use of asymmetric catalysis with main group elements, transition metal and lanthanide metals, asymmetric reagent with main group elements, transition metal and lanthanide metals, polymer supported catalysis, nucleophilic displacement of fluorine atoms to modify characteristics of molecule, incorporation of molecule into crown ethers for development of phase transfer catalysts, use of compound as a monomer for polymerization, asymmetric polymer supported electrochemical oxidation catalysis, as a chiral auxiliary in an asymmetric reaction, as a resolving agent for chiral compounds, including but not limited to amines,

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asymmetric catalysis (reagent) in fluorous phase reactions, as a chiral stationary phase for HPLC and other chromatographic techniques, and phase transfer catalyst between organic, fluorous phase and alkali solutions.

4. Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

The claims are deemed to correspond to the species listed above in the following manner:

A species of finally defined polyfluorinated binaphthyl, biphenyl or bipyridyl aromatic ring system, as appropriate.

A specific use, as set forth in claim 78.

The following claim(s) are generic: 60, 61, 78, 79, 80, 82, 83, 89, 90, and 97.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons:

The inventions listed as Groups I-XII do not relate to a single general inventive concept because the technical feature of an asymmetric ligand comprising an aromatic ring

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system that is polyfluorinated, as claimed in base claim 60, is anticipated by the prior art of Shepherd US 4,333,940 A, (e.g., at col. 1, lines 11-37, col. 2, lines 37-46, col. 6, lines 39-51, col. 13, lines 25-36, claim 1), and so cannot constitute a special technical feature linking the claims. The remainder of the claims, as set forth in the Groups above, lack the same or corresponding technical feature. The polyfluorinated aromatic ring systems, wherein the aromatic ring systems are biphenyl, binaphthyl or bipyridyl ring systems, as in claims 61 and 90, do not share a common molecular core structure that substantially results in a shared property, as the binaphthyl and biphenyl ring systems have a different number of aromatic rings and the bipyridyl ring system is a heteroaryl group that contains a nitrogen atom in the ring structure, (not shared by the binaphthyl or biphenyl ring systems). Furthermore, the burden of searching these different structures, is undue. For example, the biphenyl and binaphthyl ring systems are classed in 570/130 and the bipyridyl ring system is classed in the different class and subclass of 570/141.

5. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shibuya whose telephone number is (571) 272-0806. The examiner can normally be reached on M-F, 8:30AM-5:00PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Mark L. Shibuya  
Examiner  
Art Unit 1639

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